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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,580	09/27/2006	Tomoyuki Kogo	129354	6802

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EXAMINER	
TRIEU, THAI BA	
ART UNIT	PAPER NUMBER
3748	

NOTIFICATION DATE	DELIVERY MODE
04/07/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/594,580	KOGO, TOMOYUKI	
	Examiner	Art Unit	
	THAI BA TRIEU	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/27/2006 & 10/07/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The Preliminary Amendment filed on 09/27/2006 is acknowledged.

Claims 1-9 were cancelled; and

Claims 10-18 were newly added.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The power of attorney does not meet the requirement set forth in 1.32 (c)(3) below:

(c) A power of attorney may only name as representative:
(1) One or more joint inventors (§ 1.45);
(2) Those registered patent practitioners associated with a Customer Number;
(3) Ten or fewer patent practitioners, stating the name and registration number of each patent practitioner. Except as provided in paragraph (c)(1) or (c)(2) of this section, the Office will not recognize more than ten patent practitioners as being of record in an application or patent. ***If a power of attorney names more than ten patent practitioners, such power of attorney must be accompanied by a separate paper indicating which ten patent practitioners named in the power of attorney are to be recognized by the***

Office as being of record in the application or patent to which the power of attorney is directed.

Accordingly, Applicant is required to resubmit a substitute Oath/Declaration.

Claim Suggestions

Claims 14-17 seem to be are apparatus Claims except the preamble. Thus, Claims 14-17 are suggested to be revised in a format of method claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 10 and its dependent claims 11-13; Claim 14 and its dependent claims 15-17 and Claim 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically,

Claims 10, 14, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: structural connectivity of a controller unit and sensors with the engine system

The control unit receives signals from the sensors as inputs, such as pressure, temperatures, flow rate etc... and sends signals as outputs to actuate/adjust/regulate the injection controller and the turbine rotation controller.

Without the controller unit and sensors, the exhaust gas control apparatus and the exhaust gas control method does neither perform their function nor operate.

Claims 12 and 16, the recitation of ***'the injection controller deciding an amount of fuel injected by the after-injection based on temperature at which the catalyst is activated"*** renders the claims indefinite since it is not clear that how or by which way the after-injection can recognize the temperature at which the catalyst is to be activated in order to inject a suitable/desired amount of the fuel? Applicant is required to clarify or to revise the claimed features.

Claims 13 and 17, the recitation of ***'the injection controller deciding an amount of fuel injected by the after-injection based on temperature at which the catalyst is activated"*** renders the claims indefinite since it is not clear that how or by which way the after-injection can recognize the temperature at which the catalyst is to be activated in order to inject a suitable/desired amount of the fuel? Applicant is required to clarify or to revise the claimed features.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 10-12, 14-16, and 18 are rejected under 35 U.S.C. 103(a) as best understood as being unpatentable over Saito Shinichi et al. (Pub. Number JP 2003-206722 A).

Regarding claims 10-12 and 14-16, Saito Shinichi discloses an exhaust gas control apparatus for an internal combustion engine/ an exhaust gas control method for an internal combustion engine (11), comprising:

a catalyst (22) which is provided in an exhaust passage of an internal combustion engine (11) and which has an oxidizing ability (See Figure 1);

a supercharger (18) which includes a turbine (20) that is rotated by exhaust gas, and a compressor (19) that is rotated in accordance with rotation of the turbine (20) and that performs supercharging;

a turbine rotation controller (24) that adjusts an amount of energy of the exhaust gas, which is used for rotating the turbine (19); and

an injection controller (Not shown) that performs after-injection for injecting fuel after main fuel injection in order to increase a temperature of the exhaust gas released from the internal combustion engine (11) and flowing in the catalyst (22),

wherein when a work amount of the compressor (19) is increased due to the after-injection performed by the injection controller (Not shown), the turbine rotation controller (24) decreases the amount of energy taken from the exhaust gas for rotating the turbine (20) in order to decrease the increase in the work amount due to the after injection to zero (See Figure 1, Claim 4, and Paragraphs [0029], [0031], [0043], [0044], and [0046]);

(Re. Cls. 11 and 15) wherein the turbine rotation controller (24) decreases the amount of energy of the exhaust gas, which is used for rotating the turbine (20), by increasing an opening amount of a variable nozzle provided in the supercharger and/or an opening amount of a wastegate valve (24) (See Figure 1);

(Re. Cl. 12) wherein the injection controller (Not Shown) decides an amount of fuel injected by the after-injection based on a temperature at which the catalyst is activated, and wherein the turbine rotation, controller increases the opening amount of the variable nozzle provided in the supercharger and/or the opening amount of the wastegate valve (24) as the amount of fuel injected by the after-injection increases (See Paragraphs [0008]-[0009]).

However, Saito Shinichi fails to disclose the position of the turbine being provided in the exhaust passage at a position upstream of the catalyst having an oxidizing ability, or the position of the catalyst having an oxidizing ability and being provided in the exhaust passage at a position downstream of the turbine.

It is the examiner' s position that the positioning of the turbine being in the exhaust passage at a position upstream of the catalyst having an oxidizing ability, or the positioning of the catalyst having an oxidizing ability and being provided in the exhaust passage at a position downstream of the turbine in the above claimed positions would have been obvious to one having ordinary skill in the art. More specifically, one having ordinary skill in the art would have positioned the turbine in the exhaust passage at a position upstream of the catalyst having an oxidizing ability, or the catalyst having an

oxidizing ability in the exhaust passage at a position downstream of the turbine. The arrangement of these devices would have reduced exhaust emissions.

Regarding claim 18, Saito Shinichi discloses an exhaust gas control apparatus for an internal combustion engine, comprising:

a catalyst (22) which is provided in an exhaust passage of an internal combustion engine (11) and which has an oxidizing ability;

a supercharger (18) which includes a turbine (19) that is rotated by exhaust gas, and a compressor (20) that is rotated in accordance with rotation of the turbine and that performs supercharging;

turbine rotation energy amount adjusting means (24) for adjusting an amount of energy of the exhaust gas, which is used for rotating the turbine; and

after-injection performing means (Not shown) for performing after-injection for injecting fuel after main fuel injection in order to increase a temperature of the exhaust gas released from the internal combustion engine and flowing in the catalyst, wherein when a work amount of the compressor is increased due to the after-injection performed by the after- injection performing means, the turbine rotation energy amount adjusting means (24) decreases the amount of energy taken from the exhaust gas for rotating the turbine in order to decrease the increase in the work amount due to the after injection to zero (See Figure 1, Claim 4, and Paragraphs [0029], [0031], [0043], [0044], and [0046]).

However, Saito Shinichi fails to disclose the position of the turbine being provided in the exhaust passage at a position upstream of the catalyst having an oxidizing ability,

or the position of the catalyst having an oxidizing ability and being provided in the exhaust passage at a position downstream of the turbine.

It is the examiner' s position that the positioning of the turbine being in the exhaust passage at a position upstream of the catalyst having an oxidizing ability, or the positioning of the catalyst having an oxidizing ability and being provided in the exhaust passage at a position downstream of the turbine in the above claimed positions would have been obvious to one having ordinary skill in the art. More specifically, one having ordinary skill in the art would have positioned the turbine in the exhaust passage at a position upstream of the catalyst having an oxidizing ability, or the catalyst having an oxidizing ability in the exhaust passage at a position downstream of the turbine. The arrangement of these devices would have reduced exhaust emissions.

Claims 10-12, 14-16, and 18 are rejected under 35 U.S.C. 103(a) as best understood as being unpatentable over Saito Shinichi et al. (Pub. Number JP 2003-206722 A), in view of either Kobayashi Masaaki et al. (Pub. Number JP 2003-278536 A) or Nagae Masahiro (Pub. Number JP 2002-070536 A).

Regarding claims 10-12 and 14-16, Saito Shinichi discloses an exhaust gas control apparatus for an internal combustion engine/ an exhaust gas control method for an internal combustion engine (11), comprising:

a catalyst (21) which is provided in an exhaust passage of an internal combustion engine (11) (See Figure 1);

a supercharger (18) which includes a turbine (20) that is rotated by exhaust gas, and a compressor (19) that is rotated in accordance with rotation of the turbine (20) and that performs supercharging;

a turbine rotation controller (24) that adjusts an amount of energy of the exhaust gas, which is used for rotating the turbine (19); and

an injection controller (Not shown) that performs after-injection for injecting fuel after main fuel injection in order to increase a temperature of the exhaust gas released from the internal combustion engine (11) and flowing in the catalyst (22),

wherein when a work amount of the compressor (19) is increased due to the after-injection performed by the injection controller (Not shown), the turbine rotation controller (24) decreases the amount of energy taken from the exhaust gas for rotating the turbine (20) in order to decrease the increase in the work amount due to the after injection to zero (See Figure 1, Claim 4, and Paragraphs [0029], [0031], [0043], [0044], and [0046]);

(Re. Cls. 11 and 15) wherein the turbine rotation controller (24) decreases the amount of energy of the exhaust gas, which is used for rotating the turbine (20), by increasing an opening amount of a variable nozzle provided in the supercharger and/or an opening amount of a wastegate valve (24) (See Figure 1);

(Re. Cl. 12) wherein the injection controller (Not Shown) decides an amount of fuel injected by the after-injection based on a temperature at which the catalyst is activated, and wherein the turbine rotation, controller increases the

opening amount of the variable nozzle provided in the supercharger and/or the opening amount of the wastegate valve (24) as the amount of fuel injected by the after-injection increases (See Paragraphs [0008]-[0009]).

However, Saito Shinichi fails to disclose the catalyst having an oxidizing ability.

Kobayashi Masaaki/Nagae Masahiro teaches that it is conventional in the art of controlling exhaust emissions for turbocharged internal combustion engines, to utilize the catalyst having an oxidizing ability (20 of Kobayashi Masaaki; 22 of Nagae Masahiro) (See Figure 1 and Paragraphs [0058], [0071] of Kobayashi Masaaki; Figure 1, Abstract , Paragraph [0020] of Nagae Masahiro).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the catalyst having an oxidizing ability, as taught by Kobayashi Masaaki/Nagae Masahiro, to prevent /solve a clogging/accumulating of particulate matter or soot when the exhaust gas is to be discharged to the atmosphere.

Alternatively, the substitution of the catalyst having an oxidizing ability (20/22) as shown in Kobayashi Masaaki/Nagae Masahiro for a Diesel particulate filter (DPF) (21) would have been obvious to one of ordinary skill in the art at the time of the invention since the substitution of the catalyst having an oxidizing ability (20/22) would have yielded predictable results, namely, to prevent/solve a clogging/accumulating of particulate matter or soot when the exhaust gas is to be discharged to the atmosphere. *KSR Int'l Co.* v. *Teleflex Inc.*, 82 USPQ2d 1395 (U.S. 2007).

Regarding claim 18, Saito Shinichi discloses an exhaust gas control apparatus for an internal combustion engine, comprising:

a catalyst (21) which is provided in an exhaust passage of an internal combustion engine (11);

a supercharger (18) which includes a turbine (19) that is rotated by exhaust gas, and a compressor (20) that is rotated in accordance with rotation of the turbine and that performs supercharging;

turbine rotation energy amount adjusting means (24) for adjusting an amount of energy of the exhaust gas, which is used for rotating the turbine; and

after-injection performing means (Not shown) for performing after-injection for injecting fuel after main fuel injection in order to increase a temperature of the exhaust gas released from the internal combustion engine and flowing in the catalyst, wherein when a work amount of the compressor is increased due to the after-injection performed by the after- injection performing means, the turbine rotation energy amount adjusting means (24) decreases the amount of energy taken from the exhaust gas for rotating the turbine in order to decrease the increase in the work amount due to the after injection to zero (See Figure 1, Claim 4, and Paragraphs [0029], [0031], [0043], [0044], and [0046]).

However, Saito Shinichi fails to disclose the catalyst having an oxidizing ability.

Kobayashi Masaaki/Nagae Masahiro teaches that it is conventional in the art of controlling exhaust emissions for turbocharged internal combustion engines, to utilize the catalyst having an oxidizing ability (20 of Kobayashi Masaaki; 22 of Nagae

Masahiro) (See Figure 1 and Paragraphs [0058], [0071] of Kobayashi Masaaki; Figure 1, Abstract , Paragraph [0020] of Nagae Masahiro).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the catalyst having an oxidizing ability, as taught by Kobayashi Masaaki/Nagae Masahiro, to prevent /solve a clogging/accumulating of particulate matter or soot when the exhaust gas is to be discharged to the atmosphere.

Alternatively, the substitution of the catalyst having an oxidizing ability (20/22) as shown in Kobayashi Masaaki/Nagae Masahiro for a Diesel particulate filter (DPF) (21) would have been obvious to one of ordinary skill in the art at the time of the invention since the substitution of the catalyst having an oxidizing ability (20/22) would have yielded predictable results, namely, to prevent/solve a clogging/accumulating of particulate matter or soot when the exhaust gas is to be discharged to the atmosphere. *KSR Int'l Co.* v. *Teleflex Inc.*, 82 USPQ2d 1395 (U.S. 2007).

Claims 13 and 17 are rejected under 35 U.S.C. 103(a) as best understood as being unpatentable over Saito Shinichi et al. (Pub. Number JP 2003-206722 A), in view of either Kobayashi Masaaki et al. (Pub. Number JP 2003-278536 A) or Nagae Masahiro (Pub. Number JP 2002-070536 A); and further in view of Kawamoto Keiji (Pub. Number JP 2003-120353 A).

The modified Saito Shinichi device discloses the invention as recited above; however, fails to disclose at least one of intake air amount detector that detects an amount of intake air flowing through an intake passage of the internal combustion

engine and intake air pressure detector that detects a pressure of the intake air is further provided in the intake passage of the internal combustion engine.

Kawamoto Keiji teaches that it is conventional in the art of controlling exhaust emissions for turbocharged internal combustion engines, to utilize at least one of intake air amount detector that detects an amount of intake air flowing through an intake passage of the internal combustion engine and intake air pressure detector (9) that detects a pressure of the intake air is further provided in the intake passage of the internal combustion engine (See Figure 1, Paragraphs [0021] and [0023]), and

wherein the turbine rotation controller (18) decreases the amount of energy of the exhaust gas, which is used for rotating the turbine, when a value detected by the intake air amount detector or the intake air pressure detector (via 9) after the after-injection is performed is higher than a value detected by the intake air amount detector or the intake air pressure detector before the after-injection is performed (See Figure 1, Abstract and Paragraph [0030]).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized at least one of intake air amount detector that detects an amount of intake air flowing through an intake passage of the internal combustion engine and intake air pressure detector that detects a pressure of the intake air is further provided in the intake passage of the internal combustion engine, as taught by Kawamoto Keiji, to improve the performance efficiency of the exhaust gas purification for the modified Saito Shinichi device.

Prior Art

The information disclosure statements (PTO-1449) submitted on **27 September 2006 and 07 October 2009** have been acknowledged and placed in the file. The submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner. Each initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THAI BA TRIEU whose telephone number is (571)272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TTB
March 30, 2010

/Thai-Ba Trieu/
Primary Examiner
Art Unit 3748